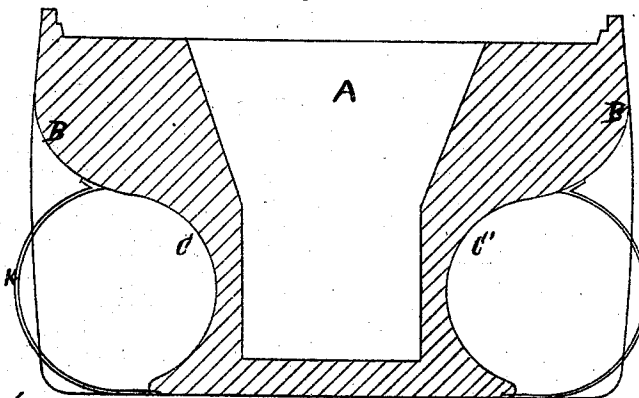
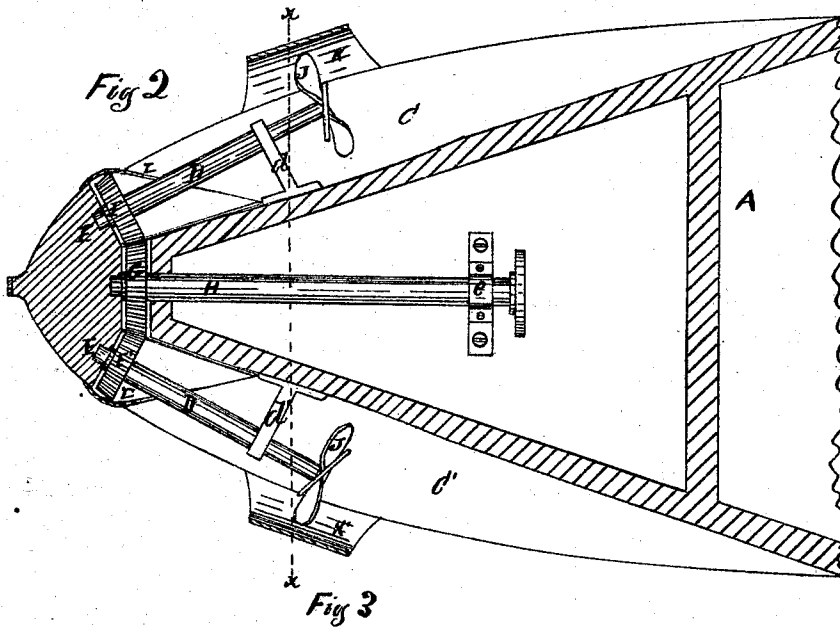
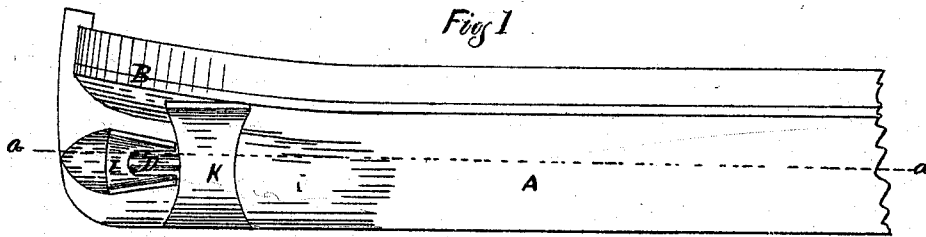


H. NILES.

Improvement in Propulsion of Vessels.

No. 122,640.

Patented Jan. 9, 1872.



Witnesses.
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UNITED STATES PATENT OFFICE.

HIRAM NILES, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN PROPULSION OF VESSELS.

Specification forming part of Letters Patent No. 122,640, dated January 9, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, HIRAM NILES, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Canal-Boats; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a side elevation of a portion of a canal-boat embodying my improvements. Fig. 2 is an enlarged longitudinal transverse section of the same, taken on line *a a*, drawn horizontally through Fig. 1; Fig. 3 is an enlarged vertical transverse section, taken on line *x x*, drawn across Fig. 2, with the parts employed in propelling the boat removed, showing the form of the bow.

Similar letters of reference indicate like parts in the several figures of the drawing.

My invention relates that class of boats propelled by steam-power, used in canals and other restricted water-channels; and the improvements consist in the employment of propeller-wheels, which are placed at and attached to the bows, and inclosed within a cylindrical case, and so arranged as to rotate uniformly by the rotation of the main or line-shaft, whereby a forward movement is imparted to the boat; also, in concaving the bows of the boat in such a manner as to receive the said wheels under the overhanging portion of said boat, where by the said wheels are protected from the walls of the canal; and also in the positions of the shafts carrying the propeller-wheels, whereby the water is discharged from said wheels through the cylinder backward, partially under the boat and in line therewith.

In the drawing, A represents the boat, the rear portion of which is constructed in the usual form, and is, therefore, not shown. The bow, above high-water line, is constructed in a bluff round shape, as shown at B, and is concaved upon either side, as shown at C C', extending backward at an angle of incidence sufficiently acute to part the water with the least resistance. D and D' are shafts arranged with the concavities of the bow, as shown in

Fig. 2, the rear ends thereof being secured in boxes *d d'*, affixed to the side of the boat and extending outward therefrom. The forward ends of said shafts are secured or have their bearings within the solid portion of the bow, as shown at E, said bow being so formed as to receive the same. Mounted upon the forward end of the said shafts are gear-wheels F and F', which engage a corresponding gear-wheel, G, upon the main or line-shaft H, secured longitudinally within the center of the bow, as shown in Fig. 2. This shaft is supported at its rear end within a suitable box, *e*, affixed to the bottom of the boat, and at the forward end within the solid portion of the bow. To said shaft is attached a connecting-rod, not shown, which communicates with a suitable engine, arranged at any desired point within the boat, by which means a rotary movement is imparted to the said shaft. Firmly affixed to the rear ends of shafts D and D' are the propeller-wheels J and J', which are so arranged as to revolve within the concavity of the bows. K and K' are metal plates, which are of a semi-annular form, the lower portions of which are attached to the bottom or shoe of the boat, and the upper portion to the overhanging portion of the bow, thus forming a cylindrical case, within which the propeller-wheels revolve, thereby protecting the said wheels from contact with the walls of the canal or any sunken or hidden obstruction. L and L' are metal hoods, which are secured to the solid portion of the bow, and extend backward over the wheels of shafts D and D', thereby protecting the same against collisions, and any moving obstructions that may come in contact with the boat, said hoods being provided with slots or openings through which the said shafts pass.

My said improved canal-boat is operated as follows: A rotating motion is imparted to the main or driving-shaft by means of the engine, and which motion is communicated to the twin propeller-wheels J and J', of shafts D and D', through the medium of wheels F and F' and G, thereby imparting a forward movement to the boat.

It will be observed that in the construction of a canal-boat, as described, for use in canals or other restricted water-channels, the twin

propeller-wheels are placed at a point where the water is deepest, most solid and least disturbed by currents, and consequently most effective in their application and hold upon the water; and by placing said wheels on a line of divergence with the angle of the bow, they squarely face the volume of water as it is divided by the stern, and is guided by the wedge-shaped bows in a direct line to the wheels; that by the revolution of said wheels, the water is thrown abaft on the same line of the diverging bows, beyond the forward section of the boat, and as the boat is moving in an opposite direction to the current from the wheels, the current will have passed well abaft of the center of the boat before its recoil can take place. The effect of thus taking the water from the wave or swell which piles up at the bow

of the boat and throwing it well abaft before its recoil, materially reduces the bow swell and consequent displacement of water by the forward movement of the boat, and necessarily the lateral swell which washes against the banks or walls of the canal.

Having thus described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of shafts H, wheels F and F' and G, shafts D D', propeller-wheels J J', and the semi-annular plates or guards K K', all arranged substantially as and for the purpose described.

HIRAM NILES.

Witnesses:

N. C. GRIDLEY,

N. H. SHEERBURNE.

(139)